IN THE SPECIFICATION

Please amend the paragraph bridging pages 23 and 24 as follows.

Air sensors 135 are frequently used in blood processing equipment to prevent air emboli and for detecting leaks in the draw portions of a blood circuit. Also, in the commonly assigned ~~pending~~ application US Patent Application 09/900,362 for "Method and Apparatus for Leak Detection in a Fluid Line," now issued patent No. 6,572,576, the entirety of which is hereby incorporated by reference as if fully set forth herein in its entirety, air sensors 135 are proposed to be used to detect leaks in other portions of a circuit by intermittently creating negative pressure in otherwise positive-pressure portions of the blood circuit. The latter technique is a highly reliable method of leak detection. Given the gravity of a leak in an extracorporeal blood processing system, however, it is always useful to increase reliability, if possible.

Please amend the first and second paragraphs after the "Detailed Description of the Embodiments" heading on page 15 as follows.

Referring to FIG. 1A according to an embodiment of the invention, signals from multiple sensor inputs A, B, . . . N indicated at 10, 15, . . . 20 are applied to an alarm condition detector 30. The alarm condition detector 30 determines whether an alarm condition exists. One of the ideas behind this configuration of combining multiple inputs is that effect that are insufficiently determinative on their own to be reliable alarm indicators can, in combination, provide a highly reliable indicator of an alarm condition. That is, if multiple sensor signals are combined to produce a net valence, the impact of a false positive or negative in any one of them is reduced.

An alarm condition classifier 35 may then identify the nature of the alarm condition detected by the alarm condition detector. The functions of detecting an alarm condition 30 and classifying the alarm condition 35 (i.e. identifying the type of alarm condition) would be performed by the same process or step. For example, in a classification engine such as a Bayesian classifier or neural network, many inputs are combined to "recognize" the current system status. Determining the status, for example: patient has lost a significant amount of blood, could be a

classification derived from multiple simultaneous inputs, for example: elevated heart rate, fluid detected outside blood circuit, air detected inside blood circuit, and patient weight dropping slightly. Each of these different inputs contribute to varying degrees and ways depending on the values of other inputs according to how the classifier is programmed. In sophisticated systems that make use of artificial-intelligence, the interaction of the inputs can be complex. But, from the overarching perspective, many inputs are combined to generate a current status signal and that status signal is either a normal status or an aberrant status, the latter being one for which an alarm may be generated as indicated by alarm controller and outputs 45, 50, and 55. Thus, the process of classifying the status includes detecting an alarm condition.

Please amend the two paragraphs running from line 16, p. 17 to line 19, p. 18 as follows.

Referring now to FIG. 1B, to illustrate a hardware environment where the multiple inputs/multiple level alarm system may be used, consider a patient 300 shown seated in a chair 355 being treated by an extracorporeal blood treatment machine 310. A pressure monitor 340 is connected to monitor a patient access 341. A monitoring system node 350 has an alarm output 365, which may include, for example, a flashing light or a speaker or siren. Not shown here, the alarm output may additionally or alternatively have a component for sending messages via public or private telephone (i.e., private branch exchange, "PBX," or publicly switch telephone networks, "PSTN"), cell networks, computer networks, the Internet, or radio transmissions e.g., as indicated by the antenna 360, to other locations. A video camera 325 continuously captures images of the patient 300 and transmits these to the monitoring system node 350, which may include an image-, or video-, processing component to reduce data in the image or video sequence to some form manageable to be classified in the monitoring system node 350.

Various other sensors may include a pulse monitor, for example a fingertip pulse monitor 330, a blood circuit 320 pressure monitor 335, etc. A user-interface

terminal 370 permits alarms to be responded to and for changes to be made in programming, initialization, and training of classification algorithms.

Please amend the paragraph running from line 16, p. 17 to line 19, p. 18 as follows.

skin color monitored by a video camera or some other optical sensor 145, which may change as blood is lost;

Please amend the paragraph running from line 5 to line 17 on p. 23 as follows.

Fluid sensors 115 may be used to detect blood or other fluids that have leaked from the blood processing system or connections. For example, a collector placed within the housing of the blood processing machine may detect leaks by funneling any leaking blood into a fluid sensor, which may thereafter indicate the presence of fluid by an output signal. The patient heart rate 130 may be output to the controller/classifier 190 as well. As mentioned above, the heart rate 130 may indicate distress, for example, due to hypovolemia due to blood loss. Continuity detectors 120 and bioimpedance sensors 150 may also be used to provide indications of a needle falling out or loss of blood from tissues. Also, as noted above, skin color monitored by an optical sensor145 may change as blood is lost.

Please amend the paragraph bridging pages 23 and 24 as follows.

Air sensors 135 are frequently used in blood processing equipment to prevent air emboli and for detecting leaks in the draw portions of a blood circuit. Also, in the commonly assigned ~~pending~~ application US Patent Application 09/900,362 for "Method and Apparatus for Leak Detection in a Fluid Line," now issued patent No. 6,572,576, the entirety of which is hereby incorporated by reference as if fully set forth herein in its entirety, air sensors 135 are proposed to be used to detect leaks in other portions of a circuit by intermittently creating negative pressure in otherwise positive-pressure portions of the blood circuit. The latter technique is a highly reliable method of leak detection. Given the gravity of a

leak in an extracorporeal blood processing system, however, it is always useful to increase reliability, if possible.

Please amend the paragraph running from line 11 p. 32 to line 13 on p. 33 as follows.

Note that programmable controllers may be the most versatile and often the cheapest mechanism for implementing aspects of the invention, such as the combination of multiple inputs, they are not the only way. A simple analog system can provide an ability to form a weighted sum of the outputs of two detectors. For example, referring to FIG. 9, Detector A 505 and detector B 510 each applies its respective signal to a respective one of signal multipliers 520 and 525, respectively. The signal multipliers 520 and 525 may amplify the respective signals, including inverting, attenuating, and augmenting its magnitude. A summer 530 adds the amplified values of the two signals to produce a final output that drives an alarm 515. The result is that one detector's output may function as an inhibitor of another, or it may have the effect of changing the alarm-triggering threshold of the signal from another detector. FIG. 9 is exemplary and not comprehensive. It is possible to use the output of one detector to determine the weight applied to another signal and linear and nonlinear combinations of two or more signals may be combined in various ways to extend the combination shown in FIG. 9, as would be clear to a person of skill in the field of complex analog control systems.